

Anticipated Costs and Capabilities of the NASA Curatorial Facility September 2003

Any samples of extraterrestrial planetary materials returned by New Frontiers missions must be delivered to the NASA Astromaterials Curatorial Facility located at NASA's Johnson Space Center (JSC); contact Dr. Carlton Allen, Astromaterials Curator, telephone (281) 483-5126. Costs for use of this facility must be included in the NASA OSS Cost. Investigation teams will be responsible for all aspects of the delivery of such materials to this facility, which will be given the task of providing for the physical security, inventory accountability, environmental preservation, and distribution of the samples in support of scientific research programs organized around each mission, including sample processing in support of the mission science team. The science team will be allocated no more than 25 percent (by mass) of the returned sample unless a larger fraction has been fully justified by the proposed investigation. NASA shall keep the remainder in pristine condition for research competitively proposed by the community at large.

Funding for use of the JSC Curatorial Facility, including laboratory construction or modification, must be included in the budget for the proposed mission. The anticipated costs of sample curation are based on the following guidelines:

- The actual costs for all aspects of curation will be borne by the mission for two years prior to and two years following spacecraft return. After that time, the continuing costs will be borne by the same organization that funds curation of other extraterrestrial samples (currently the NASA Cosmochemistry Program).
- Samples from a lunar mission will be curated in the present Lunar Curatorial Facility, but separated from the Apollo lunar collection. Samples will be processed and stored in nitrogen gas at ambient temperature. A cost estimate is presented below for such curation.
- Samples from a comet mission will be curated in a new laboratory, to be constructed within existing space at JSC. Samples will be processed and stored in nitrogen gas. Costs estimates are presented below for curation at two temperatures: ambient and -40 C. If the mission requires curation at lower temperatures, technology and costs for such curation must be included in the proposal.
- Any requirements for special sample containment and handling beyond that needed for scientific purposes will be determined prior to launch by the NASA Planetary Protection Officer in accordance with NPD 8020.7E "Biological Contamination Control for Outbound and Inbound Planetary Spacecraft" or the current revision. The additional curation costs generated by any such special requirements will be borne by the mission.

Cost estimates are presented in FY03 dollars. JSC Full Cost Accounting estimates are included for Civil Servant Full-Time Equivalent (CS FTE) and JSC Support Contractor Full-Time Equivalent (CON FTE) personnel. All cost estimates must be recalculated to real year dollars using the NASA New Start Inflation Index (AO Table B-3).

Estimated Curatorial Costs for a Lunar Sample Return Mission

<u>Activities and Personnel</u>	<u>Costs FY03 \$K</u>	<u>Total FY03 \$K</u>
Tasks: Personnel Support and Training, Laboratory Preparation, Laboratory Certification		
<u>Second year prior to Mission Return</u>		
Laboratory Manager (0.25 CS FTE)	37	
Facility Engineer (0.10 CS FTE)	15	
Sample Processor (0.25 CON FTE)	33	
Laboratory Technician (0.25 CON FTE)	33	
Equipment (2 processing cabinets)	200	
Supplies and Consumables	20	
Reserve (10%)	34	372
<u>First year prior to Mission Return</u>		
Laboratory Manager (0.25 CS FTE)	37	
Facility Engineer (0.10 CS FTE)	15	
Sample Processor (0.50 CON FTE)	67	
Laboratory Technician (0.50 CON FTE)	67	
Supplies and Consumables	20	
Communication	5	
Reserve (10%)	21	232
<u>Mission Return</u>		
Tasks: Personnel Support, Laboratory Operation, Sample Receipt, Initial Characterization, Publication of Descriptions, Distribution		
<u>First year following Mission Return</u>		
Laboratory Manager / Curator (0.25 CS FTE)	37	
Sample Processor (1.00 CON FTE)	134	
Laboratory Technician (0.50 CON FTE)	67	
Supplies and Consumables	20	
Communication	5	
Reserve (10%)	26	289
<u>Second year following Mission Return</u>		
Laboratory Manager / Curator (0.25 CS FTE)	37	
Sample Processor (1.00 CON FTE)	134	
Laboratory Technician (0.50 CON FTE)	67	
Supplies and Consumables	20	
Communication	5	
Reserve (10%)	26	289

Estimated Curatorial Costs for a Comet Sample Return Mission (ambient temperature)

Activities and Personnel Costs FY03 \$K Total FY03 \$K

Tasks: Personnel Support and Training, Laboratory Preparation, Laboratory Certification

Second year prior to Mission Return

Laboratory Manager (0.50 CS FTE)	73	
Facility Engineer (0.25 CS FTE)	37	
Sample Processor (0.50 CON FTE)	67	
Laboratory Technician (0.50 CON FTE)	67	
Laboratory Construction	800	
Equipment (2 processing cabinet)	200	
Supplies and Consumables	30	
Reserve (10%)	127	1401

First year prior to Mission Return

Laboratory Manager (0.50 CS FTE)	73	
Facility Engineer (0.25 CS FTE)	37	
Sample Processor (1.00 CON FTE)	134	
Laboratory Technician (1.00 CON FTE)	134	
Laboratory Construction and Certification	200	
Supplies and Consumables	30	
Communication	5	
Reserve (10%)	61	674

Mission Return

Tasks: Personnel Support, , Laboratory Operation, Sample Receipt, Initial Characterization, Publication of Descriptions, Distribution

First year following Mission Return

Laboratory Manager / Curator (0.50 CS FTE)	73	
Sample Processor (1.00 CON FTE)	134	
Laboratory Technician (1.00 CON FTE)	134	
Supplies and Consumables	30	
Communication	5	
Reserve (10%)	38	414

Second year following Mission Return

Laboratory Manager / Curator (0.50 CS FTE)	73	
Sample Processor (1.00 CON FTE)	134	
Laboratory Technician (1.00 CON FTE)	134	
Supplies and Consumables	30	
Communication	5	
Reserve (10%)	51	414

Estimated Curatorial Costs for a Comet Sample Return Mission (temperature –40 C)

Activities and Personnel Costs FY03 \$K Total FY03 \$K

Tasks: Personnel Support and Training, Laboratory Preparation, Laboratory Certification

Second year prior to Mission Return

Laboratory Manager (0.75 CS FTE)	110	
Facility Engineer (0.50 CS FTE)	73	
Sample Processor (0.50 CON FTE)	67	
Laboratory Technician (0.50 CON FTE)	67	
Laboratory Construction	1000	
Equipment (2 refrigerated processing cabinets)	400	
Supplies and Consumables	40	
Reserve (20%)	351	2108

First year prior to Mission Return

Laboratory Manager (0.75 CS FTE)	110	
Facility Engineer (0.50 CS FTE)	73	
Sample Processor (1.00 CON FTE)	134	
Laboratory Technician (1.00 CON FTE)	134	
Laboratory Construction and Certification	200	
Automation (micromanipulators)	200	
Supplies and Consumables	40	
Communication	5	
Reserve (20%)	179	1075

Mission Return

Tasks: Personnel Support, , Laboratory Operation, Sample Receipt, Initial Characterization, Publication of Descriptions, Distribution

First year following Mission Return

Laboratory Manager / Curator (0.75 CS FTE)	110	
Sample Processor (1.00 CON FTE)	134	
Laboratory Technician (1.00 CON FTE)	134	
Supplies and Consumables	40	
Communication	5	
Reserve (20%)	85	508

Second year following Mission Return

Laboratory Manager / Curator (0.75 CS FTE)	110	
Sample Processor (1.00 CON FTE)	134	
Laboratory Technician (1.00 CON FTE)	134	
Supplies and Consumables	40	
Communication	5	
Reserve (20%)	85	508